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Title: Mission Statement for Interim Release One for the ECS Project

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222-WP-001-002

Mission Statement for Interim Release One for the ECS Project

White paper - Not intended for formal review or Government approval.

August 1995

Prepared Under Contract NAS5-60000

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Abstract

The ECS Interim Release One System (Ir1) will be deployed January 2, 1996 at four of the Distributed Active Archive Centers (DAACs)—GSFC, EDC, MSFC & LaRC. It will be an incremental release leading to Release A. Ir1 has the primary objectives of (1) supporting science software integration and test, and (2) supporting early TRMM interface testing. In addition, Ir1 will provide an infrastructure of basic hardware and system software that will be reused in Release A. The introduction of Ir1 is intended to reduce overall ECS schedule risk.

This White Paper is not a formal deliverable and is not subject to government review or approval.

Keywords: Ir1 DAAC TRMM science software integration test interface schedule

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1. Introduction

This White Paper discusses the ECS Interim Release One System (Ir1) to be deployed January 2, 1996 at four of the Distributed Active Archive Centers (DAACs) - GSFC, EDC, MSFC & LaRC. This Paper is not a formal deliverable and is not subject to government review or approval.

1.1 Primary Objectives

The Ir1 system has two primary objectives:

Science Software Integration and Test (SSI&T). Ir1 provides an environment for the early integration and testing of science software from the EOS AM-1 instrument teams and TRMM's CERES and LIS instrument teams. Early SSI&T gives the instrument teams, DAAC personnel and the ECS development team the ability to test the portability of the science software using test data provided by the instrument teams.

Early TRMM Interface Testing. Ir1 provides capabilities for early functional testing of TRMM-ECS interfaces among several facilities including the Sensor Data Processing Facility (SDPF), the TRMM Science Data and Information System (TSDIS), NOAA/NESDIS, the Data Assimilation Office (DAO), and three DAACs - LaRC, GSFC and MSFC.

1.2 Secondary Objectives

Ir1 has the following secondary objectives:

Provide Incremental Build for Release A. Ir1 provides the first installment of Release A. It provides basic system hardware and software that is used in Release A. It also provides reusable interfaces for the SSI&T environment and for system management.

Reduce ECS Schedule Risk. Ir1 prototypes PDPS and CSS/MSS infrastructure based on COTS selected for Release A. Software developed for Ir1 makes the first system-wide use of ECS distributed infrastructure services. Ir1 provides essential lessons-learned and shakedown of ECS internal processes and hand-offs ahead of Release A. These processes include:

a. Science software I&T processes

b. Procurement, development, system I&T

c. System assembly, shipping, and installation

d. External coordination with SCFs, DAACs, ESDIS, IV&V, and the TRMM project

2. Capabilities of Interim Release One

2.1 Science Software Integration and Test

Ir1 provides an environment to support early integration and testing of science software. It also provides a user interface that has the "look and feel" of the Release A SSI&T environment. The following tools are provided to support the SSI&T capabilities:

a. SCF and DAAC versions of SDP Toolkit

b. Compilers: C, C++, FORTRAN 77 and 90, ADA (LaRC only)

c. File comparison utility

d. Static and dynamic code checkers for standards compliance

e. Profiling Tools for resource monitoring

f. Product visualization/graphics Tool

g. Document viewing tools

h. Math, graphics, and statistics libraries

i. Software configuration management tool

Section 4 describes SSI&T capabilitites in greater detail.

2.2 TRMM Data Ingest Interface

Ir1 provides capabilities for supporting TRMM ingest interface testing. The system supports the testing of the automated network ingest interface with SPDF and TSDIS. This testing includes the exchange of security authentication messages, the verification of message protocols, and the verification of the ingest file transfer capability. Ir1 also supports the testing of the polling ancillary data ingest interface with NESDIS and DAO. Section 6 describes TRMM data ingest interface testing capabilitites in greater detail.

2.3 TRMM Data Retrieval Interface

Ir1 provides the capability to support the testing of the Data Server interface with TSDIS. This testing includes the exchange of security authentication messages, the verification of message protocols, and the verification of the capability to transfer files from the Data Server subsystem to TSDIS. Section 6 describes TRMM data retrieval interface testing capabilitites in greater detail.

2.4 External Interface Gateway

The Ingest and Data Server interfaces are designed to communicate with external clients using communication services provided by the the OSF Distributed Computing Environment (DCE).

TRMM and SDPF use protocols based on UNIX sockets, not DCE. Ir1 provides a communications gateway which allows these external clients to interface with Ir1 using UNIX socket calls. Section 7 describes the gateway in greater detail.

2.5 Planning and Processing

Ir1 provides basic capabilities for managing science data processing tasks. It supports manual capabilities for generating processing plans and for process initiation and control. It supports process execution profiling and diagnostic reports on Sun and SGI processors (note: the Sun is a 32-bit processor, while the SGI can operate in either a 32-bit or 64-bit mode). Ir1 also provides a prototype scheduling capability that is based on a COTS scheduler. The scheduler will enable the execution of multiple PGEs in sequence, using pre-staged test data. Section 5 describes Planning and Processing capabilitites in greater detail.

2.6 ECS Infrastructure

Ir1 provides an early implementation of communication and system management services and verifies the communications and management infrastructure. The infrastructure consists of the following:

a. Basic naming and directory, time, thread and security services (DCE-based)

b. File transfer capability, email, bulletin board, event logger, virtual terminal (telnet and X)

c. EDF-based framework for system managment and DAAC performance monitoring

d. Site-based COTS, SNMP agents for hosts, and network components as provided by Version 0.

e. Authentication (DCE account management), authorization (host-level account management), router-based security (address table management) as provided by Version 0 networks.

f. Site-based office automation tools

g. Configuration management tools for science software (at the DAACs) and development software at the EDF.

3. Architecture

3.1 Ir1 Architecture

The Ir1 architecture and interfaces define a reusable framework that supports Ir1 objectives and the implementation of Release A. Figure 3-1 illustrates the Ir1 architecture. The architecture for each site is identical; however, the computers used to support science software integration and test vary in size and capacity. The memory, disk storage, and number of processors for those computers are sized to support 30 percent of the processing requirements anticipated for the launch and operation of the sensors for both the TRMM and AM-1 missions.

3.2 Ir1 Computers and Peripherals

Table 3-1 lists Ir1 computers and associated peripherals. The machines used for interface testing and for management system services (MSS) are identical at each for each DAAC, and are only listed once. The EDF is configured to support both DAAC and SMC capabilities associated with the development, test and sustaining engineering for Ir1.

3.3 Ir1 Interfaces

Figure 3-2 is a diagram of the interfaces that support the flow of data required for Ir1 activities.

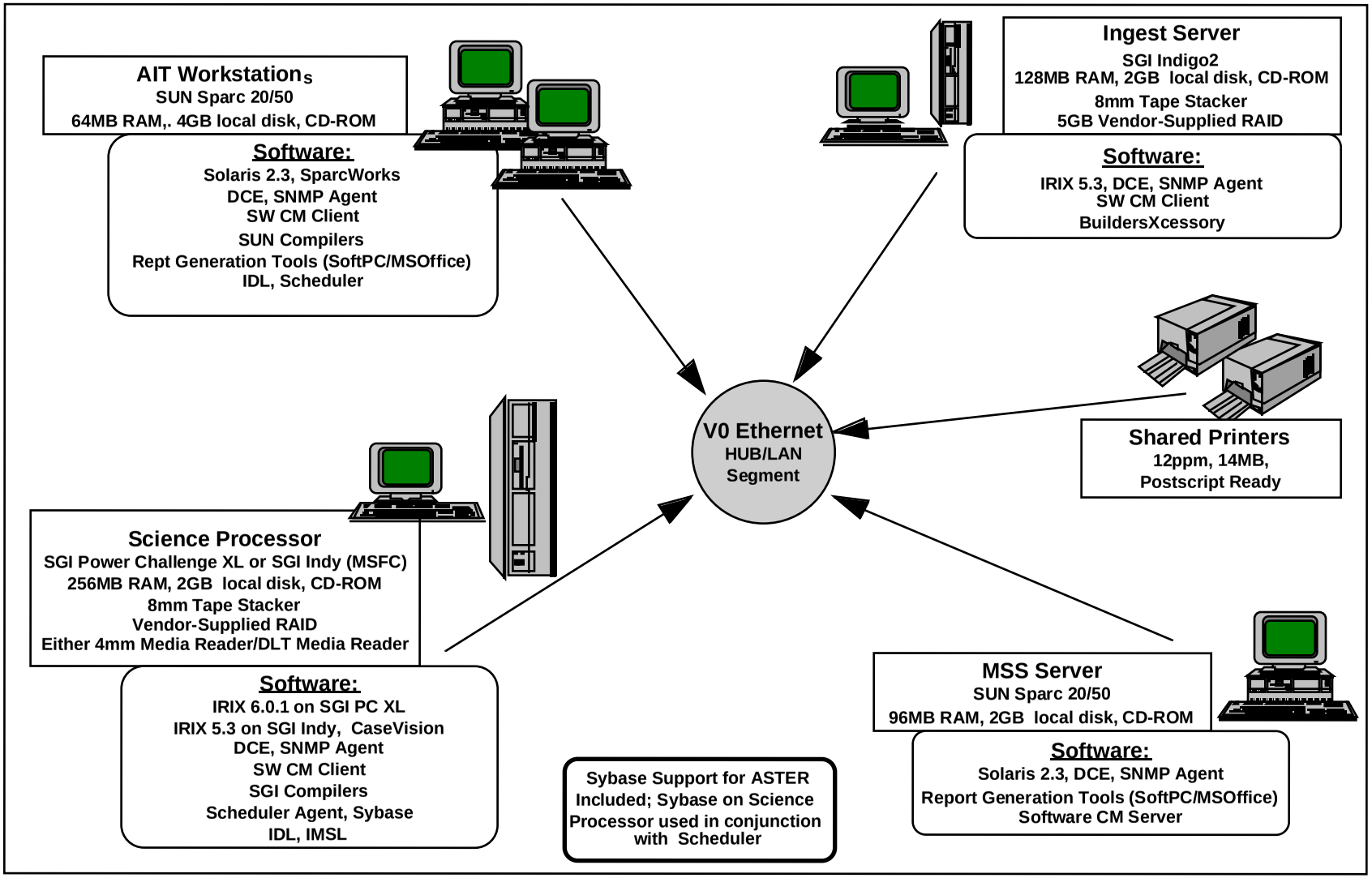

Figure 3-1 - Ir1 Architecture

Table 3-1. Platforms and Associated Peripherals for the DAACs and EDF

DAAC Site	SSI&T Platforms -Science Processors and WorkStations	Associated Peripherals	Ingest/Interface Testing Platforms and attached Peripherals	MSS Workstations
EDC	Processor: SGI Power Challenge XL, 2 CPUs; Wksta: 2 SUN Sparc 20/ 50s - one will have a 29 GB RAID for the ASTER data base	35 GB RAID, CD ROM, and 8mm tape w. stacker. Network connection to 2 laser printers.	Not available at EDC for Ir1.	SUN Sparc 20/50 with 6 GB disk
LaRC	Processor: SGI Power Challenge XL, 4 CPUs; Wksta: 2 SUN Sparc 20/ 50s	68 GB RAID, 8mm tape w.stacker, and CD ROM. Network connection to 2 laser printers	SGI Ingigo2, 6 GB disk 8 mm tape w. stacker, CD ROM. Network connection to 2 laser printers	SUN Sparc 20/50 with 6 GB disk
GSFC	Processor: SGI Power Challenge XL, 6 CPUs; Wksta: 2 SUN Sparc 20/ 50s	75 GB RAID, 8mm tape w.stacker, and CD ROM. Network connection to 2 laser printers	SGI Indigo2, 6 GB disk 8 mm tape w. stacker, CD ROM. Network connection to 2 laser printers	SUN Sparc 20/50 with 6 GB disk
MSFC	Processor: SGI INDIGO; Wksta: 2 SUN Sparc 20/ 50s	6 GB disk, 8mm tape w.stacker, and CD ROM. Network connection to 2 laser printers.	SGI Indigo2,16 GB disk, 8 mm tape w. stacker, CD ROM. Network connection to 2 laser printers	SUN Sparc 20/50 with 6 GB disk
EDF	Processor 1: SGI Power Challenge XL, 2 CPUs; Processor 2: SGI Indigo; Wksta: 1 SUN Sparc 20/ 50s	2 disk Configurations (30 GB RAID and 6 GB disk), 8mm tape w. stacker, and CD ROM. Network connection to 2 laser printers.	SGI Indigo2, 6 GB disk, 8 mm tape w. stacker, CD ROM. Network connection to 2 laser printers	MSS server: HP755 with 5 GB disk. CSS server: HP755 with 5 GB RAID.

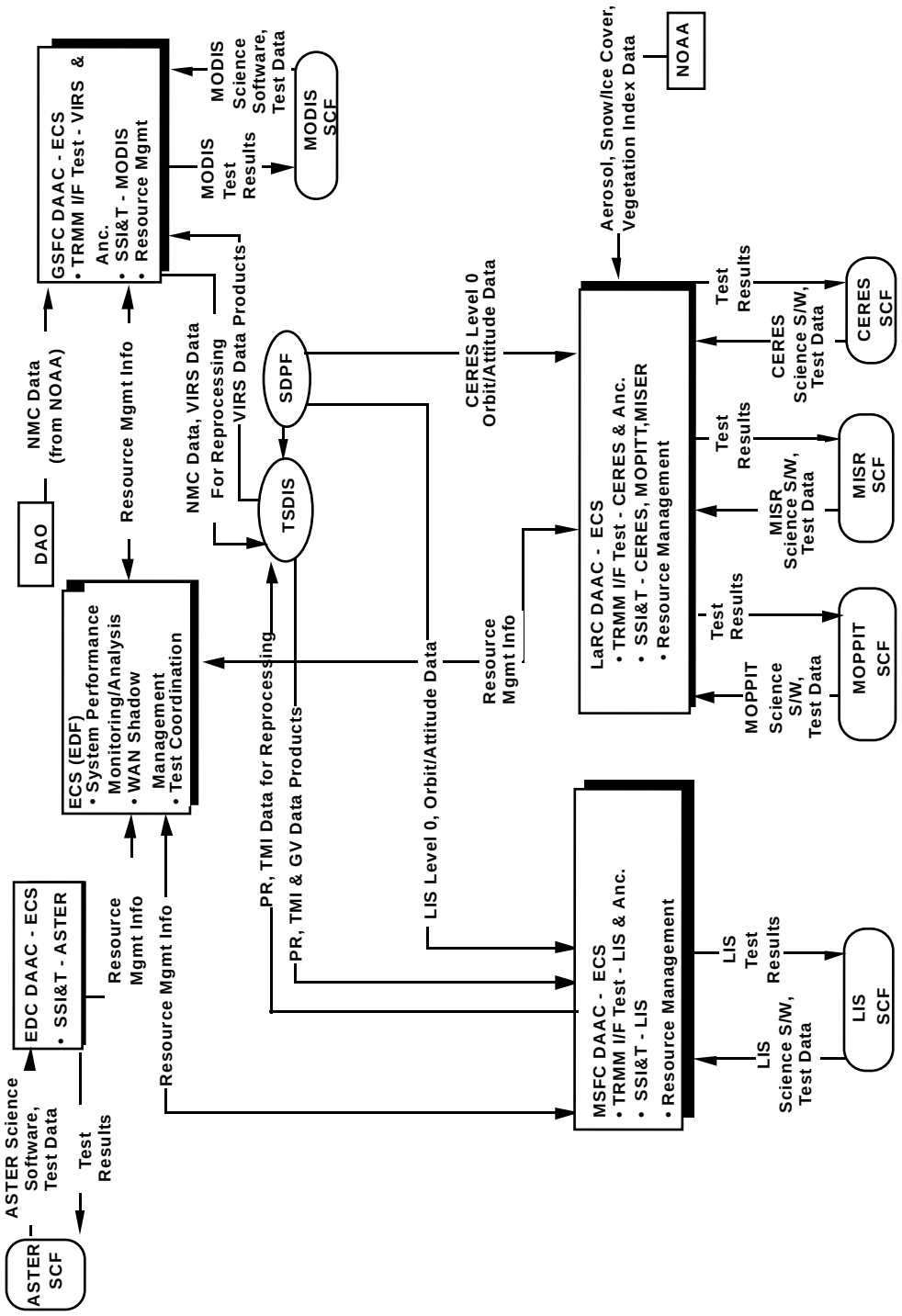

Figure 3-2. Ir1 Interfaces

4. Science Software Integration and Test

4.1 Ir1 Goals

Ir1 provides the ECS Developers and the DAACs with the opportunity to work with integrated science software for the first time, and will provide an early insight into the Release A SSI&T environment. The science software has been developed by members of the instrument teams to turn the future TRMM and EOS-AM1 sensor radiance data into geophysical data products. Goals of the Ir1 SSI&T activites are the following:

a. Provide an opportunity to verify the portability of science software between the SCF computing environment and the DAAC computing environment.

b. Reduce the risk associated with integrating and testing a large amount of science software at the DAACs, as ECS development moves forward in support of the TRMM and AM-1 missions.

c. Provide an opportunity to run and verify the proposed procedures needed for SSI&T at the DAACs.

4.2 Science Software Delivery Package

Science software is delivered to Ir1 in a delivery package which includues the following:

a. One or more Product Generation Executables (PGEs)

b. Test data input files that are processed by the PGEs during controlled tests

c. Test data output generated by the PGEs from the test data input

d. Documentation describing the delivered software and its operating instructions

4.3 Science Software Integration and Test Procedure

The ECS Science Office and ESDIS Science Software Managers have developed a candidate set of "cross-DAAC" procedures for Ir1 SSI&T. These candidate procedures were presented and reviewed at the SSI&T Workshop on April 18-19 1995, at the ECS facility, and are summarized below:

a. The instrument team coordinates the SSI&T schedule with ESDIS and the DAACs

b. The instrument team delivers their science software delivery package to the DAAC

c. The delivery package is checked for adherance to ESDIS standards

d. The science software is placed under configuration control

e. The science software is compiled and linked with the DAAC version of the SDP Toolkit

f. The execution of the DAAC version of the science software is verified with test input data

Since the workshop, the DAACs have worked with the instrument teams and have developed SSI&T procedures appropriate for each DAAC. It is expected that these procedures will be refined as the development of Ir1 proceeds.

4.4 Remote Testing of Science Software

Ir1 provides the capability for the instrument teams to access the DAAC SSI&T environment remotely, from the SCFs. Specifically, Ir1 provides telnet and a file transfer capability which will allow the instrument teams to perform the remote testing of science software.

4.5 Status of Instrument Teams' Science Software

The instrument teams for the TRMM and AM-1 sensors are at various stages in developing the science software for their respective missions. Table 4-1 summarizes the status of the software deliveries for each instrument team.

Table 4-1. Status of Instrument Team's Software Deliveries for Ir1

Instrument	Spacecraft Mission	SSI&T DAAC Site	ECS Release	Scope of The Science Software at IR
ASTER	EOS-AM1	EDC	Rel. B	The ASTER Team will have many of their Level 2 Modules ready at Ir1. Software delivered will not have HDF, extensive error handling or interfaces to external data sets defined at this time. Parts of SDP Toolkit will be included as part of the software (it is not known whether they will use other parts of the SDP Toolkit besides the mandatory tools). The ASTER Team will have 4 sets of test data to use at Ir1.
CERES	TRMM/AM-1	LARC	Rel. A &B	The CERES Team is trying to have 60 percent of their software needed for TRMM and AM-1 done by Ir1. They will use portions of the SDP Toolkit in their software. The CERES Team will not be using HDF or have extensive error and exception handling developed at this time. They have two month's worth of test data (each 17 GB in size) to use to test their software once integrated.
LIS	TRMM	MSFC	Rel. A	The LIS Team expects to have Science Software for the generation of Level 1-3 Standard Products done the Ir1 Delivery. Their Version 1 Software will be fairly "operational robust" and will use the SDP Toolkit SMF functions to generate processing logs and Q/A data files which will then be transferred to the SCF for analysis work. They will use the HDF Library to format the output of Level 2-3 Products as HDF data structures. Depending the Status of the HDF-EOS Library (i.e., completeness of the Library), will determine whether the LIS Team will attempt to use the HDF-EOS Library in their Version 1 Delivery. Simulated Level 0 data is the only test data required for the LIS Team's standard processing and they will supply Level 0 data based on raw data from the Optical Transient Detector (OTD) Instrument. The OTD is an engineering prototype of LIS and was recently launched in April, 1995. The OTD data processing software will use prototypes of the LIS Version 1 software package.

Table 4-1. Status of Instrument Team's Software Deliveries for Ir1 (cont)

Instrument	Spacecraft Mission	SSI&T DAAC Site	ECS Release	Scope of The Science Software at IR
MISR	EOS-AM1	LaRC	Rel. B	The MISR Team's Beta Delivery will be composed of two components. One, there will be a shell, or framework, of the complete product generation system. This framework should indicate the overall structure of the MISR processing system, and may be useful for demonstrating interfaces, planning, and operation concepts. The other component will be individual PGE elements that are destined to work within the overall shell, but which at this stage are self contained PGEs that should help in demonstrating the actual processing, and to a limited extent the needed system resources. Software will not contain extensive error handling and will not use HDF-EOS at Ir1. They do have a suite of test data they are currently developing. Size and structure is not known at this time.
MODIS	EOS-AM1	GSFC	Rel. B	MODIS Team would like to have integrated Level 1 and 2 Software ready. Extensive error handling will not be included at Ir1. Use of HDF-EOS will depend on the status of HDF-EOS Library. MODIS is currently developing a suite of test data for use at Ir1. More details concerning the test data are needed.
MOPITT	EOS-AM1	LaRC	Rel. B	MOPITT Team will have much of their Level 2 Software ready for Ir1. At this time, they will format both the Level 2 output and simulated Level 1 input files as HDF data structures; however, it is not known whether they will use the HDF-EOS Library and it will depend upon when this Library is ready for the community to use. The Ir1 Beta Delivery will generate diagnostic, browse and QA data files, but will not have extensive error handling or full usage of the SDP Toolkit Status/Message Facility Routines. The team will deliver all necessary test data as part of their Ir1 Delivery. They will have simulated MOPITT data (aircraft sensor data), and they will also have ancillary data (e.g., NMC analysis data).

5. Planning and Data Processing

5.1 Capabilities

Ir1 Planning and Data Processing software is designed and developed for reuse in Release A, and should be viewed as an increment of the development of the Release A PDPS. The Planning and Data Processing Subsystem of Ir1 has the following capabilities:

a. Receive science software and associated data provided by Ir1 instrument teams via the network.

b. Provide the necessary SSI&T tools for verifying the contents, implementation, and operation of single PGEs that were developed using the SCF version of the SDP Toolkit

c. Verify the operation of single PGEs using the DAAC version of the SDP Toolkit

d. Verify the products produced by the PGE

e. Run multiple PGEs

f. Provide manual processing plan generation

g. Provide manual processing initiation and control

h. Provide a prototype automated process scheduling capability

i. Provide Release A production interfaces.

5.2 The Scheduler

Ir1 is providing a prototype process scheduling capability based on a COTS scheduler. This is being done for two reasons. First, the scheduler is provided in order to provide an early implementation of Release A data processing capabilities. Release A requires an advanced scheduling capability; Ir1 is providing a scheduler prototype in order to verify that the product can work with the Ir1 infrastructure that will be reused in Release A. Second, the scheduler is provided in order to support the integration environment for TRMM Version 1 science software.

ECS has evaluated several scheduler products and has recommended one to ESDIS. At this writing, final approval of the selection is still pending.

6. Ir1 Testing

6.1 Tests Planned for Ir1

The following types of tests are planned for Ir1:

1. The ECS contractor is scheduled to perform subsystem and system tests on the Ir1 software until January 24th. These tests are designed to verify Ir1 compliance with the Level 3 and Level 4 requirements, and to verify compliance with the TRMM ICDs using the TRMM interface simulators.
2. The IV&V contractor performs their acceptance tests on all Ir1 components as part of ESDIS EOS Ground System (EGS) system integration and test activities.
3. Subsequently, EOSDIS Test Version system integration and test is performed. This includes "TRMM Mission Sim2" tests to verify the interface between the TRMM SDPF and ECS.

The scheduling of EGS test activities will be coordinated by the ESDIS Project. Early interface tests with TRMM will be coordinated with the TRMM project.

6.2 TRMM Interface Testing

ECS participates in planned ESDIS/TRMM Project interface tests. These tests are designed to (1) verify compliance with the ICD and the Level 3 and Level 4 interface requirements, and (2) identify any problems or unexpected limitations in the interface design. This testing is prior to the Release A delivery of these interfaces by TRMM and ECS. Ir1 provides ingest and data server interfaces to support interface testing, only. It does not provide a closed capability to ingest and subsequently retrieve the same ingested data. The testing of the following interfaces is supported:

a. Level 0 CERES and LIS interfaces between the SDPF and the MSFC and LaRC DAACs
b. Level 1 and other TRMM data ingest interfaces between TSDIS and the GSFC and MSFC DAACs
c. NOAA/NESDIS ingest interface
d. DAO ingest interface
e. SSM/I and GPCP data interface between the MSFC DAAC and TSDIS
f. NMC and VIRS reprocessing data retrieval interface between TSDIS and the GSFC and MSFC DAACs
g. PR and TMI reprocessing data retrieval interface between TSDIS and the MSFC DAAC

6.2.1 SDPF Ingest Testing

Ir1 supports TRMM project simulations to verify the SDPF-to-ECS ingest interfaces. These interfaces support the ingest of Level 0 CERES and LIS data from the SDPF into the LaRC and MSFC DAACs. The simulations verify the correct exchange of messages, including status and error messages, between the SDPF and the DAACs, for the purpose of requesting the ingest of Level 0 data. The simulations also verify that the Ir1 file transfer capability can be used to accomplish the transfer of data from the SDPF into the ECS at LaRC and MSFC.

6.2.2 TSDIS Ingest Testing

Ir1 supports TRMM project simulations to verify the TSDIS-to-ECS ingest interfaces. These interfaces support the ingest of Level 1-3 data from TSDIS into the GSFC and MSFC DAACs. The simulations verify the correct exchange of messages, including status and error messages, between TSDIS and the DAACs, for the purpose of requesting the ingest of Level 1-3 data. The simulations also verify that the Ir1 file transfer capability can be used to accomplish the transfer of data from the SDPF into the ECS at GSFC and MSFC.

6.2.3 DAO Ingest Testing

Ir1 supports TRMM project simulations to verify the DAO-to-ECS ingest interface. This interface support the ingest of NMC ancillary data from DAO into the GSFC DAAC. The simulations verify the correct exchange of messages, including status and error messages, between DAO and GSFC, for the purpose of requesting the ingest of NMC data. The simulations also verify that the Ir1 file transfer capability can be used to accomplish the transfer of data from the DAO into the ECS at GSFC.

6.2.4 NESDIS Ingest Testing

Ir1 supports TRMM project simulations to verify the NESDIS-to-ECS ingest interface. This interface supports the ingest of NESDIS ancillary data from NESDIS into the LaRC DAAC. The simulations verify the correct exchange of messages, including status and error messages, between NESDIS and LaRC, for the purpose of requesting the ingest of NESDIS data. The simulations also verify that the Ir1 file transfer capability can be used to accomplish the transfer of data from NESDIS into the ECS at LaRC.

6.2.5 TSDIS Data Retrieval Testing

Ir1 supports TRMM project simulations to verify the ECS-to-TSDIS data retrieval interface. This interface supports requests by TSDIS to retrieve Level 1-3 data and ancillary data from the GSFC and MSFC DAACs. The simulations verify the correct exchange of messages, including status and error messages, between TSDIS and the DAACs, for the purpose of requesting the retrieval of data. The simulations also verify that the Ir1 file transfer capability can be used to accomplish the transfer of data from ECS to TSDIS.

7. Network Implementation and Management

7.1 Network Software

Ir1 uses DCE to support communication between Ir1 application processes within and between the various Ir1 sites. The use of DCE allows ECS to evolve to support advanced capabilities in future releases. Ir1 is implemented within a single DCE cell. Figure 7-1 shows the DCE cell topology for Ir1.

Ir1 supports communication between the Ir1 sites and non-DCE external clients (e.g. TSDIS and SDPF) via a communications gateway. The gateway allows the external clients to access Ir1 services using UNIX socket calls. The gateway converts the socket calls to DCE remote procedure calls and vice-versa.

7.2 Network Hardware

Ir1 uses the existing Version 0 Wide Area Network (WAN) to transport data between sites. Ir1 uses the existing Version 0 LAN infrastructure to support local networking at the GSFC, LaRC, and MSFC DAACs. Ir1 is connected to the Version 0 LAN at EDC via an Ethernet hub provided by Ir1.

7.2.1 EDC Version 0 LAN

The EDC LAN segment that forms the existing Version 0 network is a thick Ethernet (10 Base5) implemented using an 8 port AUI fanout box (Cabletron MT810). Three of the ports are currently being utilized for the Version 0 routers (primary and secondary) and a Version 0 host. Since the existing segment is not able to accommodate up to 10 network attached devices (servers, workstations and printers), ECS will provide a low end 10BaseT hub. This configuration will remain until Release B when an ECS DAAC network will be delivered. The 10BaseT hub will be integrated with the existing Version 0 segment (i.e. It will be connected to the MT810 fanout box).

7.2.2 GSFC Version 0 LAN

Based on discussions with GSFC DAAC personnel it has been determined that up to 10 ECS devices can be supported on the Ethernet (10BaseT) portion of the Version 0 DAAC LAN. Therefore, ECS will totally depend on DAAC provided network facility to support seven to ten network attached devices. The servers, workstations and printers will be on a 10BaseT segment (currently a Cabletron MMAC hub is used). Network interface cards will support the 10BaseT Ethernet specification.

7.2.3 LaRC Version 0 LAN

Current Version 0 hosts are on 10BaseT segments out of a Synoptics hub. Based on discussions with the LaRC DAAC network personnel it has been determined that up to 10 ECS devices can be

supported on the existing Version 0 DAAC LAN. Therefore, ECS will totally depend on the LaRC DAAC provided network facility to support seven to ten network attached devices. Since the LAN is Ethernet (10BaseT) based, network interface cards will support the 10BaseT Ethernet specification.

7.2.4 MSFC Version 0 LAN

The general network configuration for Ir1 at the MSFC DAAC is similar to the one at LaRC. Based on discussions with DAAC network personnel it has been determined that up to 10 ECS devices can be supported on the Ethernet segment (10BaseT) of the existing Version 0 DAAC LAN. Therefore, ECS will totally depend on DAAC provided network facility to support seven to ten network attached devices. Network interface cards will support the 10baseT Ethernet specification. More information is available in the "Facility Plan for Ir1 and Release A for the ECS Project" White Paper (March 1995).

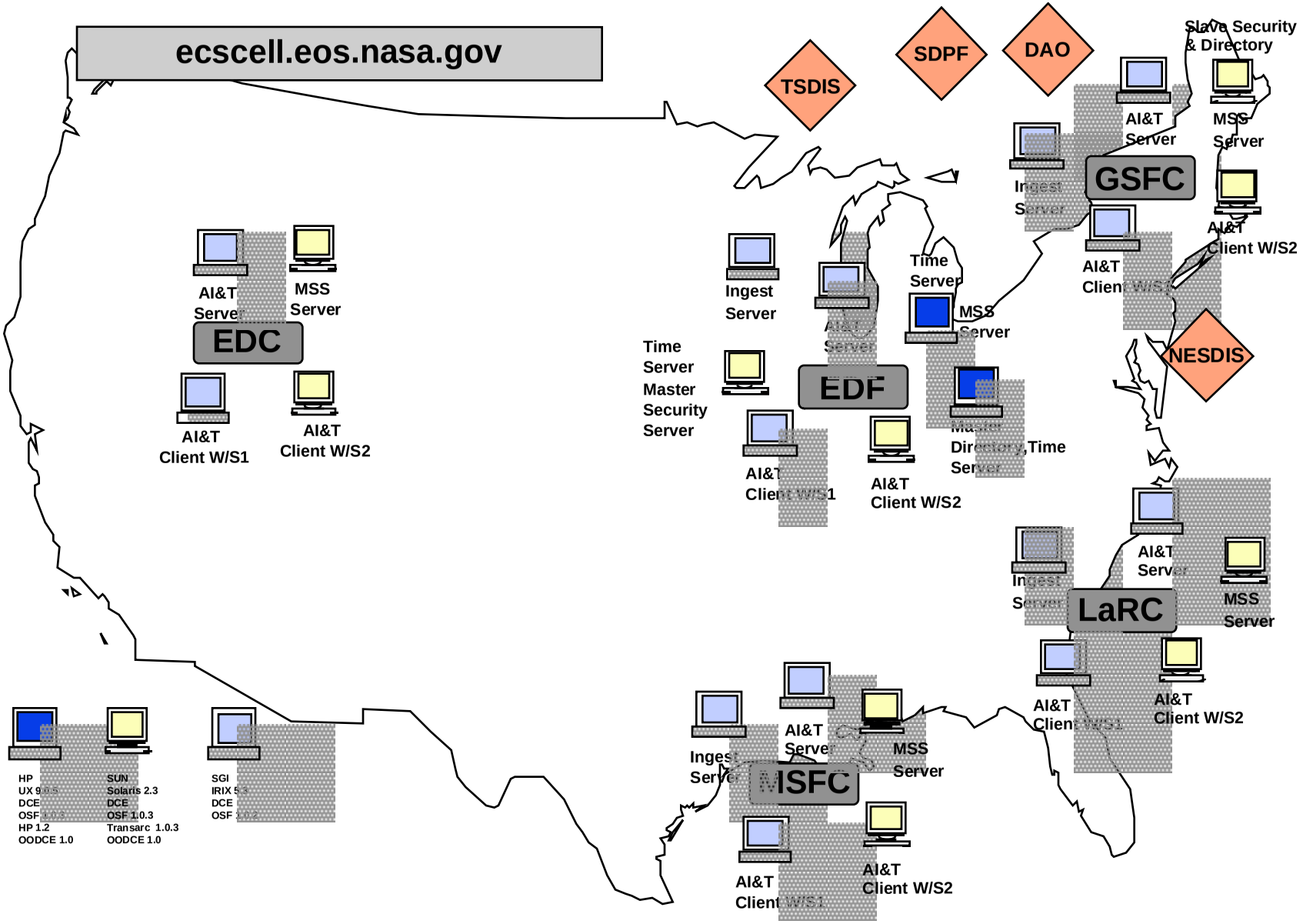

Figure 7-1 - DCE Cell Topology

8. Schedule

Figure 8-1 is a high level development schedule for Ir1. It will be refined with future releases of this document.

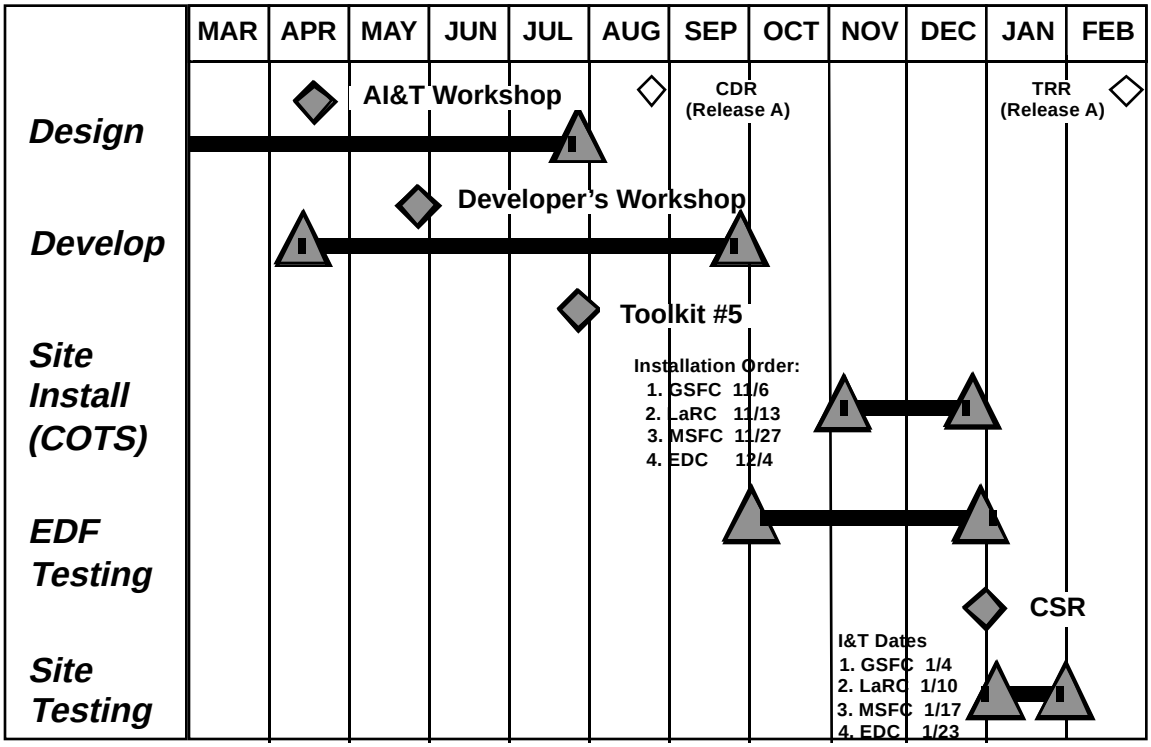

Figure 8-1 High Level Development Schedule for Ir1

Appendix A - Frequently Asked Questions

This section provides a place where questions can be asked in regards to Ir1 (with some answers). Each question is placed in a specific category.

General Questions

Q. What reviews are taking place for Ir1?

A. Technical reviews include internal design inspections (ESDIS invited) and monthly "release reviews". Programmatic reviews include Customer Monthly Program Reviews (MPR) and the CSR on 12/95

Q. What documentation is required for Ir1?

A. Ir1 will maintain PDR requirements, PDR design specification, the Ir1 portion of the RTM data base, and test documents. Ir1 will produce a version of DID 609 (Maintenance and Operations Procedures) and DID 611 (Operator's Manuals). Ir1 will develop Ir1 test procedures. Design notebooks will be maintained throughout Ir1 to reflect incremental designs. The Ir1 design notebooks are available to Release A staff for CDR as needed.

Q. What's the best way to communicate with the DAACs?

A. All communications should be coordinated through the ECS SE Liaison or ECS Science Liaison. If ECS would like Ir1 Telecons (or visits) with the DAACs it must be coordinated through the ECS Liaisons.

Communications/Network Management

Q. Why is a Bulletin Board needed for Ir1?

A. The CSMS Requirements Specification, Paragraph. 6.2.3.1 explains the function of the Bulletin Board Service (BBS) in ECS. It is provided in Ir1 in order to introduce its function prior to Release A. The BBS developed in the EPs will be reused for Ir1.

Q. Is there a formal security certification for Ir1?

A. None is currently planned.

Q. What type of security e.g. password is provided during Ir1?

A. Ir1 provides a DCE cell and host-level security access. SCF users enter their user name and a password to access the Ir1 cell. The user name and password are sent to the Ir1 gateway for DCE cell authentication. Authorization for UNIX host-level access is provided

to allow the use of ECS application services. Telnet and a file transfer capability are provided for direct access into the AI&T host computer.

Q. Will the sites be receiving OpenView during Ir1?

A. OpenView will reside at the EDF only to provide early experience with system management. We are, however, planning a "site view" of Ir1 resources via a X-Windows session on the site MSS server for demonstration purposes.

TRMM Interface Testing

Q. What TRMM-related ancillary data interfaces are supported by Ir1?

A. The following interfaces are to be tested by Ir1, but need further clarification by TSDIS:

- SSM/I and GPCP data interfaces between TSDIS and the MSFC DAAC
- PR and TMI reprocessing data output to TSDIS from the MSFC DAAC

The following interfaces are needed to support TRMM in Release A but are not supported in Ir1:

- SSM/I ingest at MSFC (needed to support TSDIS)
- TOMS data from GSFC (needed to support CERES)
- ISCCP from LaRC (needed to support CERES)

The following interface will not be tested by Ir1:

- MSFC to LaRC CERES liquid water pass

Q. Is there a plan to have Inter-DAAC TRMM data interface testing?

A. No - This is a Release A activity

Q. How often will the TRMM Project want to perform interface testing?

A. The frequency of interface tests will be determined based on the coordination of schedules and test objectives by the ESDIS and TRMM projects.

Q. Who will be performing the TRMM interface tests?

A. The EGS I&T, including EOSDIS IV&V support, will develop test plans and procedures. The ECS M&O staff will execute these plans and procedures.

Science Software Integration & Test and Science Data Processing Toolkit

Q. What instruments are we supporting for Ir1 AI&T?

A. We plan to support CERES, LIS, MODIS, MISR, ASTER, MOPITT, and DAO.

Q. If the Standards Checkers Tools are in the EDF before the release of Ir1 at the DAACs, can an arrangement be made to allow SCFs to use these Tools on an EDF machine prior to the release?

A. Yes, but on a non-interference basis only.

Q. What role is the AI&T team playing during Ir1, e.g. total responsibility for setting and maintaining CM tool, platform configuration etc. Is it different at each DAAC?

A. The CM tool, platform configurations, etc. will be set up by the M&O staff in accordance with agreements between the Instrument teams and the DAACs. It is anticipated that configurations will vary from DAAC to DAAC. The M&O staff will configure and maintain the system with the advice and assistance (if necessary) of the AI&T team.

Q. How often will SSI&T occur at each site?

A. This will vary between each DAAC. At the LaRC DAAC, the CERES instrument team will be doing their Version 1 integration and test, and the MISR and MOPITT AM-1 Teams will be doing their Beta delivery. Therefore, it is likely that the LaRC DAAC will have some type of I&T going on for much of Ir1. CERES has asked to be able to do multiple I&Ts based on changes to their science software. At MSFC, LIS will probably do some extensive testing of their software since it is Version 1 I&T, but they should not be at the DAAC longer than 2 months. At EDC, the ASTER Team feels they will do one robust session of SSI&T and then come back with some fixes based on the results of their initial I&T. MODIS has not currently defined how long or how many times they will do I&T during Ir1.

Q. What coordination/provision of software with SCFs will be made to ease the SSI&T process, which has been identified as a project risk?

A. ECS is providing SCF versions of the SDP Toolkit and user support for the use of the Toolkit. Also, EMAIL, telnet and a file transfer capability are provided for access and coordination.

Q. What facilities will there be in terms of software for AI&T in Release Ir1 at the DAACs?

A. Software will be provided to support all stages of AI&T. Some additional software and upgrades will be provided at Release A to account for ECS subsystems (e.g. the Planning subsystem) that do not exist in Ir1. The AI&T production environment will be supported by the Release A COTS scheduling software which provides for queued execution of both individual PGEs and chains of PGEs on heterogeneous platforms, with access to data and log files and resource profiles. The Ir1scheduling software is provided as a prototype for Release A.

Code, Unit and Integration & Test

Q. How will the Ir1 software get installed at the sites, e.g., CD ROM, 8mm, Network download?

A. The COTS software will be installed using CD ROM. The ECS software will be transmitted via the network.

Q. What is the streamlined approach of the segment to system I&T handover?

A. The Ir1 code will be handed over from developers to Ir1 testers who will perform both segment and system level testing.

System Engineering & Implementation

Q. What CM tool is being used in ECS? What is the rationale for the selection? What is the status of the procurement?

A. The selection of ATRIA's ClearCase was made based on functional requirements and the ability of the selected tool to be integrated with the system management framework.

Q. Who is responsible for the Configuration Management of the software delivered by ECS during the Ir1 time frame?

A. The Ir1 CCB is responsible.

Q. Why the difference in architecture between the SGI and Suns for AI&T?

A. The Sun was selected to minimize costs and maximize the reuse of this processor in Release A. There is no requirement that the processors have the same architecture, only that they meet requirements for open systems. The design of the Planning and Data Processing subsystem is required to allow for multiple architectures among its processors.

Q. Why are the printers configured with only 12 MB of memory?

A. Actually, the printers will be configured with 14 MB of memory. Based on our experience with printers at our Landover facility, 14 MB will meet ECS requirements.

Q. Why did we select Sun computers? They require extra controllers for tape stackers and are not as reliable as other machines?

A. Suns were selected because they were cost-effective, consistent with the development environment, and consistent with what is already at the DAACs.

Q. Is it possible to provide the DAACs a C++ compiler?

A. C++ compilers will be provided at GSFC, LaRC, and MSFC.

Q. What is going on at the EDF post Ir1 site test?

A. The EDF will support bug fixes, testing and analysis, and possibly SSI&T preparation for site activities. Also, Release A will be under development at this time.

Q. Why can't LaRC get the compilers and other system software with the hardware to be delivered in October?

A. The compilers may be available; however, the DAAC version of the SDP Toolkit would not be available to link with the science code. Also, no on-site support is currently planned.

Q. Why is there a gap between the scheduled hardware installation and CSR?

A. There was several weeks of schedule float to allow for late deliveries and other unanticipated problems. However, the latest Ir1 schedule includes these activities "as late as possible".

Maintenance and Operations Support

Q. What types of tasks will the M&O staff be performing during Ir1?

A. At the DAACs, one or two M&O staff will be hired in support of Ir1 "operation". Tasks include supporting the ECS and EGS I&T effort, inventory support, AI&T support (e.g. software CM support), and other daily activities including backups. One or two ECS M&O staff, located at the EDF, will monitor the status and performance of Ir1 at the DAACs. This includes using OpenView and providing periodic performance reports to ESDIS.

Q. Will Ir1 be producing network load reports like Version 0?

A. Yes, for loads associated with Ir1 hosts.